

# PATENT SPECIFICATION

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## DRAWINGS ATTACHED

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## (54) ENDLESS CONVEYORS

(71) I, GEORGES PIEMONT, a French citizen of 7 Rue Rabelais, Vanves (Hauts de Seine), France, do hereby declare the invention, for which I pray that a patent may be granted to me and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to endless belt conveyor and embraces, but is not restricted to, endless belt conveyors in which the belts are provided with lateral retaining walls for retaining the material conveyed on the belts.

It is known that clearing conveyor belts at the retaining walls, during discharge, is difficult if not impossible to accomplish if the belts are fitted with transverse strips.

This results in part of the material staying on the belt and passing underneath the belt during the return movement of the belt.

The present invention provides a conveyor having an endless belt extending around rollers, and a trough extending under the return flight of the belt to recover material falling from the belt, the movement of the material from one end of the trough to the other when the conveyor is in use being brought about by at least one scraper mounted fixedly on the belt and conforming in shape to the internal cross-section of the trough, an extension provided for the trough, which extension is curved around one of the rollers to a point above the load bearing flight slightly before a loading chute.

The distance between the bottom of the trough and the belt is preferably greater than the height of the retaining walls of the belt.

In this manner, all the material retained by the walls falls to the bottom of the trough, being no longer in contact with the walls and is entrained by the or each scraper strip.

The trough is preferably convex cross-section and of greater width than the width of the belt, the convex cross-section channelling the recovered material inwardly from the sides of the trough and the extension.

In order that the present invention be more clearly understood an embodiment thereof will now be described, by way of example

only, with reference to the accompanying drawings, in which:

Fig. 1 is an elevation showing a conveyor belt embodying to the present invention;

Fig. 2 is a view taken in section along line II—II of Fig. 1; and

Fig. 3 is a broken-away view taken in section along the longitudinal axis of the conveyor and shows the end of the trough allowing recycling of the material recovered in the trough.

Referring to the drawing the conveyor comprises an endless belt 1 and retaining walls 2 and running around two rollers 3 and 4 of which one is the driving roller and which have bearings supported by two longitudinal side members 5.

A flat bottom trough 6, with sloping side walls 7 is provided under the conveyor to recover material falling from the return flight of the belt.

The width of the trough is greater than that of the belt in order to recover also the material discharged sideways from the upper flight of the belt during their conveyance.

This operation is facilitated by longitudinally extending lateral deflectors 8 disposed beneath the upper flight of the belt and inclined in such a manner that the material falling laterally from the upper run is deflected into the trough.

The deflectors 8 are made up, as shown in Fig. 2, of angled strips on the side members 5, under which the sloping walls 7 are secured. In a different embodiment (not shown) the deflectors may be connected directly to the upper edge of the trough which is especially advantageous when the side members 5 are made up of latticed girders.

The distance H between the bottom of the trough 6 and the belt 1 is greater than the height h of the retaining walls 2 to avoid undesirable friction between the retaining walls 2 and the trough and to allow a gap between the extremities 2' of the retaining walls 2 and the trough 6.

This gap allows the material discharged laterally from the upper flight to flow towards the centre of the trough.

The material deposited in the trough is moved towards the front roller 3 by the action of one or more transverse scraper strips 9 fixedly mounted on the conveyor belt 1. These strips 9, whose height equals or is slightly greater than the distance  $H$ , have portions 10 which extend laterally through appropriate cut-outs in the retaining walls 2 in order to conform to the internal cross-section of the bottom and sides of the trough for ensuring the recovery of the material.

Each portion 10 of the strips 9 has notches 11 to avoid catching against support rollers 12 supporting the return flight of the belt 1.

The end of the trough situated under the front roller 3 has an extension in the form of a curved casing 13 and of the same cross-sectional shape as the trough. The curved casing 13 extends around the roller 3 so that the distance separating its bottom 14 and the belt 1 is equal to the height  $H$ .

The curved casing ensures that all the material recovered in the trough is recycled and spread on the load bearing flight in spite of the action of centrifugal force.

Naturally, a similar result could be obtained with a trough and a curved casing having a triangular or convex cross-section which would channel the objects towards the longitudinal axis of the belt.

#### WHAT I CLAIM IS:—

1. A conveyor having an endless belt extending around rollers, and a trough extending under the return flight of the belt to recover material falling from the belt, the movement of the material from one end of the trough to the other when the conveyor is in use being brought about by at least one scraper mounted fixedly on the belt and conforming in shape to the internal cross-section

of the trough, an extension being provided for the trough, which extension is curved around one of the rollers to a point above the load bearing flight slightly before a loading chute.

2. A conveyor as claimed in claim 1, wherein the distance separating the endless belt and the bottom of the trough, and the distance between the endless belt and the curved extension, are equal to one another and greater than the height of lateral retaining walls provided on the endless belt.

3. A conveyor as claimed in claim 2, wherein the trough and the curved extension are of convex cross-section and are wider than the endless belt, the convex cross-section channeling the recovered material inwardly from the sides of the trough and the extension.

4. A conveyor as claimed in claim 2 or 3, wherein the scraper extends laterally beyond the retaining walls below support rollers supporting the return flight of the endless belt.

5. A conveyor as claimed in any preceding claim, wherein inclined lateral deflectors are mounted below the load bearing flight in order to deflect material falling from the edges of the belt into the trough.

6. A conveyor as claimed in claim 5, wherein the lateral deflectors are directly connected to the upper edge of the trough.

7. A conveyor as claimed in any preceding claim, wherein the trough and the curved extension have flat bottoms and sloping sides.

8. A conveyor substantially as hereinbefore described with reference to the accompanying drawing.

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